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Hot News flash!

Second microphone demo shows marked improvement

Metro Fire Chiefs witness new technology

At the 1998 Metropolitan Fire Chiefs Conference, more than 120 fire chiefs from major U.S. cities and some foreign countries gathered to see whether MTAC and the Naval Coastal Systems Station (CSS), Panama City, Florida had come up with a winner. Frank Downs, a Coastal Systems Station researcher, Fire Chief Robert Osby and the San Diego Fire & Life Safety Services were ready to conduct a live demonstration of the second prototype head-contact microphone.

A fire company posted outside the conference hotel started up a pumper, K-12 and chain saw, creating 110 decibels of noise. In the midst of this noise, Firefighter Phil Valoff spoke into a standard 800 MHz VHF radio. The signal was transmitted to Downs four stories up in an interior conference room. Downs held his radio so the fire chiefs could hear the reception. The communication was unintelligible. Valoff then donned the fire helmet outfitted with the Navy head contact microphone and waterproof speakers. When Valoff spoke, the fire chiefs in the audience understood everything he said.

The microphone wafer is located in the front brim of the helmet liner and the speakers are located at ear level. The microphone presses against the forehead to pick up skull vibrations caused when speaking. These skull vibrations are transformed into electric signals that are then fed into the firefighter's radio.

The demonstration for the fire chiefs' conference followed a day of successful testing by the San Diego firefighters at their training facility. Hosted by Deputy Chief Virgil Hathaway and Deputy Chief Michael Burner, Downs was able to work with the firefighters to test the device under a variety of conditions. All agreed that the new device was a significant improvement over conventional radios used with lapel mics.

Frank Downs (left) and Phil Valoff get ready for the demo.

The prototype was also an improvement over that tested in Pittsburgh on March 18. After his experience in Pittsburgh, Downs returned to Florida and made several modifications in the technology. He increased voice clarity and ambient noise rejection; reduced the size of the microphone from one inch to one-half inch; and removed the battery so that the entire system is now tied into the radio battery. Downs is hoping to further improve his design by developing waterproof speakers from a NASA-developed piezoelectric device known as NASDRIV.

According to Downs, several branches of the military have contacted him about his invention as a direct result of the publicity surrounding his work with MTAC. An obvious goal of tech transfer is finding federally-developed technologies to benefit U.S. industry and the public. This project has taken that one step further by inventing new applications that return benefits to the armed services.

The Marine Corps is testing the device in their Kevlar ballistic helmets for the Urban Warrior program. The Shipboard Damage Control program of the Navy is evaluating the device next month. Eglin AFB has expressed an interest in the device for their fire fighting units and a demonstration was held for Tyndall AFB firefighters last April. The Army has entered into discussions with Downs concerning its use by ground troops, and the Department of Defense is interested in integrating the communications system into their hazardous materials protective gear.